VOLUME 354 2002

TRANSACTIONS OF THE

AMERICAN MATHEMATICAL SOCIETY

EDITED BY

Peter W. Bates
Patricia E. Bauman
William Beckner, Managing Editor
Krzysztof Burdzy
Harold G. Diamond
Lawrence Ein
Sergey Fomin
Lisa C. Jeffrey
D. H. Phong
Stewart Priddy
Theodore Slaman
Karen E. Smith
Robert J. Stanton
Abigail Thompson
Dan Voiculescu
Robert F. Williams

PROVIDENCE, RHODE ISLAND USA

ISSN 0002-9947

Transactions of the American Mathematical Society

This journal is devoted entirely to research in pure and applied mathematics.

Submission information. See **Information for Authors** at the end of this issue.

Publisher Item Identifier. The Publisher Item Identifier (PII) appears at the top of the first page of each article published in this journal. This alphanumeric string of characters uniquely identifies each article and can be used for future cataloging, searching, and electronic retrieval.

Postings to the AMS website. Articles are posted to the AMS website individually after proof is returned from authors and before appearing in an issue.

Subscription information. *Transactions of the American Mathematical Society* is published monthly. Beginning in January 1996 *Transactions* is accessible from `www.ams.org/publications/`. Subscription prices for Volume 354 (2002) are as follows: for paper delivery, $1406 list, $1125 institutional member, $1265 corporate member; for electronic delivery, $1265 list, $1012 institutional member, $1139 corporate member. Upon request, subscribers to paper delivery of this journal are also entitled to receive electronic delivery. If ordering the paper version, add $39 for surface delivery outside the United States and India; $50 to India. Expedited delivery to destinations in North America is $48; elsewhere $142. For paper delivery a late charge of 10% of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year.

Back number information. For back issues see `www.ams.org/bookstore`.

Subscriptions and orders should be addressed to the American Mathematical Society, P.O. Box 845904, Boston, MA 02284-5904 USA. *All orders must be accompanied by payment.* Other correspondence should be addressed to 201 Charles Street, Providence, RI 02904-2294 USA.

Copying and reprinting. Material in this journal may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Acquisitions Department, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA. Requests can also be made by e-mail to `reprint-permission@ams.org`.

Excluded from these provisions is material in articles for which the author holds copyright. In such cases, requests for permission to use or reprint should be addressed directly to the author(s). (Copyright ownership is indicated in the notice in the lower right-hand corner of the first page of each article.)

Transactions of the American Mathematical Society is published monthly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2294 USA. Periodicals postage is paid at Providence, Rhode Island. Postmaster: Send address changes to Transactions, American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA.

© 2002 by the American Mathematical Society. All rights reserved.

This journal is indexed in *Mathematical Reviews*, *Zentralblatt MATH*, *Science Citation Index*®, *Science Citation Index*™*–Expanded*, *ISI Alerting Services*℠, *CompuMath Citation Index*®, and *Current Contents*®*/Physical, Chemical & Earth Sciences.*

Printed in the United States of America.

⊗ The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability.

10 9 8 7 6 5 4 3 2 1 07 06 05 04 03 02

TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 354, No. 1 Whole No. 800 January 2002

Laura Scull, Rational S^1-equivariant homotopy theory 1
Jacqui Ramagge and Wayne W. Wheeler, Cohomology of buildings and finiteness properties of $\widetilde{A}_n$-groups 47
Frédéric Chapoton, Construction de certaines opérades et bigèbres associées aux polytopes de Stasheff et hypercubes 63
Olivier Renaudin, Localisation homotopique et tour de Taylor pour une catégorie abélienne 75
Donald L. Burkholder, The best constant in the Davis inequality for the expectation of the martingale square function 91
Xianzhe Dai, APS boundary conditions, eta invariants and adiabatic limits 107
Takesi Kawasaki, On arithmetic Macaulayfication of Noetherian rings 123
L. Chiantini and C. Ciliberto, Weakly defective varieties 151
Winfried Bruns and Joseph Gubeladze, Polytopal linear retractions ... 179
Mircea Mustaţă, The multiplier ideals of a sum of ideals 205
Peter Borwein and Kwok-Kwong Stephen Choi, Explicit merit factor formulae for Fekete and Turyn polynomials 219
Charalambos Charitos and Georgios Tsapogas, Topological mixing in $CAT(-1)$-spaces 235
Zhonghai Ding, On nonlinear oscillations in a suspension bridge system 265
Karin Erdmann and Daniel K. Nakano, Representation type of Hecke algebras of type A 275
David Gluck and Kay Magaard, The extraspecial case of the $k(GV)$ problem 287
Ilya Kapovich, Subgroup properties of fully residually free groups 335
Yi-Zhi Huang and Antun Milas, Intertwining operator superalgebras and vertex tensor categories for superconformal algebras, II 363
Jorge Almeida, Dynamics of implicit operations and tameness of pseudovarieties of groups 387
Mohan S. Putcha, Shellability in reductive monoids 413

Vol. 354, No. 2 Whole No. 801 February 2002

Jerry L. Bona, S. M. Sun, and Bing-Yu Zhang, A non-homogeneous boundary-value problem for the Korteweg-de Vries equation in a quarter plane 427
B. Canuto, E. Rosset, and S. Vessella, Quantitative estimates of unique continuation for parabolic equations and inverse initial-boundary value problems with unknown boundaries 491

Peter Kuchment and Sergei Levendorskiĭ, On the structure of spectra of periodic elliptic operators 537
Andreas Kollross, A classification of hyperpolar and cohomogeneity one actions 571
Jason P. Bell, Sufficient conditions for zero-one laws 613
Jean B. Lasserre, Polynomials nonnegative on a grid and discrete optimization 631
Nantel Bergeron and Frank Sottile, Skew Schubert functions and the Pieri formula for flag manifolds 651
Anton Malkin, Tensor product varieties and crystals: GL case 675
Youn–Seo Choi, Tenth order mock theta functions in Ramanujan's lost notebook (IV) 705
Charles Frohman, Răzvan Gelca, and Walter LoFaro, The A-polynomial from the noncommutative viewpoint 735
G. Kyriazis and P. Petrushev, New bases for Triebel-Lizorkin and Besov spaces 749
Michael Frank, Vern I. Paulsen, and Terry R. Tiballi, Symmetric approximation of frames and bases in Hilbert spaces 777
W. J. Colmenarez and C. A. Morales, Transverse surfaces and attractors for 3-flows 795
Chi-Kwong Li and Alexandru Zaharia, Induced operators on symmetry classes of tensors 807
Masaaki Furusawa and Joseph A. Shalika, On inversion of the Bessel and Gelfand transforms 837

Vol. 354, No. 3 **Whole No. 802** **March 2002**

Richard B. Sowers, Stochastic averaging with a flattened Hamiltonian: A Markov process on a stratified space (a whiskered sphere) 853
R. K. Getoor, Finely μ-harmonic functions of a Markov process 901
Ludomir Newelski, Small profinite structures 925
E. Bouscaren and F. Delon, Groups definable in separably closed fields 945
James H. Schmerl, Coloring $\mathbb{R}^n$ 967
Mei-Chu Chang, Some combinatorics of binomial coefficients and the Bloch-Gieseker property for some homogeneous bundles 975
Sean Sather-Wagstaff, A dimension inequality for Cohen-Macaulay rings 993
Jay A. Wood, The structure of linear codes of constant weight 1007
David T. Gay, Symplectic 2-handles and transverse links 1027
Brian H. Bowditch, Splittings of finitely generated groups over two-ended subgroups 1049
A. Fursikov, M. Gunzburger, and L. Hou, Trace theorems for three-dimensional, time-dependent solenoidal vector fields and their applications 1079

Jong Uhn Kim, On a stochastic nonlinear equation in one-dimensional viscoelasticity 1117
Koichiro Naito, Recurrent dimensions of quasi-periodic solutions for nonlinear evolution equations 1137
Loukas Grafakos and Rodolfo H. Torres, Discrete decompositions for bilinear operators and almost diagonal conditions 1153
J. K. Langley, Composite Bank-Laine functions and a question of Rubel ... 1177
Emmanuel Hebey, Sharp Sobolev-Poincaré inequalities on compact Riemannian manifolds 1193
David Borthwick and Peter Perry, Scattering poles for asymptotically hyperbolic manifolds 1215
Bernhard Krötz and Karl–Hermann Neeb, Spherical unitary highest weight representations 1233
F.-H. Vasilescu, Hamburger and Stieltjes moment problems in several variables 1265

Vol. 354, No. 4 **Whole No. 803** **April 2002**

A. Bendikov and L. Saloff-Coste, Gaussian bounds for derivatives of central Gaussian semigroups on compact groups 1279
M. Kokubu, M. Takahashi, M. Umehara, and K. Yamada, An analogue of minimal surface theory in $\mathrm{SL}(n, \mathbf{C})/\mathrm{SU}(n)$ 1299
Joan Bagaria and Jordi López-Abad, Determinacy and weakly Ramsey sets in Banach spaces 1327
J.-P. Brasselet, D. Lehmann, J. Seade, and T. Suwa, Milnor classes of local complete intersections 1351
Frank Quinn, Dual decompositions of 4-manifolds 1373
J. B. Van den Berg and R. C. Vandervorst, Second order Lagrangian Twist systems: simple closed characteristics 1393
Eduard Feireisl and Hana Petzeltová, Global existence for a quasi-linear evolution equation with a non-convex energy 1421
B. E. Forrest and L. W. Marcoux, Weak amenability of triangular Banach algebras 1435
Min Qian and Shu Zhu, SRB measures and Pesin's entropy formula for endomorphisms 1453
Jan Kiwi, Wandering orbit portraits 1473
Neal J. Fowler and Aidan Sims, Product systems over right-angled Artin semigroups 1487
Andreas Čap and A. Rod Gover, Tractor calculi for parabolic geometries 1511
Iain Gordon and Alexander Premet, Block representation type of reduced enveloping algebras 1549
Panagiota Daskalopoulos and Manuel del Pino, Nonradial solvability structure of super-diffusive nonlinear parabolic equations 1583

Athanassios G. Kartsatos and Igor V. Skrypnik, The index of a critical point for densely defined operators of type $(S_+)_L$ in Banach spaces ... 1601
Vladimir Marković, Extremal problems for quasiconformal maps of punctured plane domains ... 1631
Malabika Pramanik, Convergence of two-dimensional weighted integrals ... 1651
Mikhail Feldman and Robert J. McCann, Monge's transport problem on a Riemannian manifold ... 1667
S. Petermichl and S. Pott, An estimate for weighted Hilbert transform via square functions ... 1699

Vol. 354, No. 5 **Whole No. 804** **May 2002**

F. R. Cohen and S. Gitler, On loop spaces of configuration spaces ... 1705
Christian Nassau, On the structure of $P(n)_*P((n))$ for $p = 2$ ... 1749
Fabio Podestà and Gudlaugur Thorbergsson, Polar and coisotropic actions on Kähler manifolds ... 1759
Paul Larson and Stevo Todorcevic, Katětov's problem ... 1783
Jürgen Herzog, Lê Tuân Hoa, and Ngô Viêt Trung, Asymptotic linear bounds for the Castelnuovo-Mumford regularity ... 1793
William J. Heinzer, Aihua Li, Louis J. Ratliff, Jr., and David E. Rush, Monoidal extensions of a Cohen-Macaulay unique factorization domain ... 1811
Thomas Keilen and Ilya Tyomkin, Existence of curves with prescribed topological singularities ... 1837
Hui-Wen Lin, On crepant resolution of some hypersurface singularities and a criterion for UFD ... 1861
Mihnea Popa, Verlinde bundles and generalized theta linear series ... 1869
Donghoon Hyeon, Principal bundles over a projective scheme ... 1899
José F. Fernando, Sums of squares in real analytic rings ... 1909
Sergey Yuzvinsky, Small rational model of subspace complement ... 1921
Terence Tao, On the maximal Bochner-Riesz conjecture in the plane for $p < 2$ ... 1947
Tadeusz Iwaniec, Nonlinear Cauchy-Riemann operators in $\mathbb{R}^n$ ... 1961
Paul MacManus and Carlos Pérez, Trudinger inequalities without derivatives ... 1997
Joan Orobitg and Carlos Pérez, A_p weights for nondoubling measures in R^n and applications ... 2013
Christer O. Kiselman, A semigroup of operators in convexity theory ... 2035
Charalambos D. Aliprantis and Rabee Tourky, The super order dual of an ordered vector space and the Riesz–Kantorovich formula ... 2055
George M. Bergman, Constructing division rings as module-theoretic direct limits ... 2079
Jian-yi Shi, Certain imprimitive reflection groups and their generic versions ... 2115

Vol. 354, No. 6 Whole No. 805 June 2002

S. Paul Smith, Subspaces of non-commutative spaces 2131
L. Abrams and C. Weibel, Cotensor products of modules 2173
Wayne W. Wheeler, Local subgroups and the stable category 2187
Franco Flandoli and Marco Romito, Partial regularity for the stochastic Navier-Stokes equations 2207
Matthias Reitzner, Random points on the boundary of smooth convex bodies 2243
Neil N. Katz and Kei Kondo, Generalized space forms 2279
Andrew D. Hwang and Michael A. Singer, A momentum construction for circle-invariant Kähler metrics 2285
Frank Morgan and Manuel Ritoré, Isoperimetric regions in cones 2327
J. M. McDougall, Orthogonal polynomials and quadratic extremal problems 2341
Sławomir Rams, Three-divisible families of skew lines on a smooth projective quintic 2359
J. W. Cannon, W. J. Floyd, and W. R. Parry, Twisted face-pairing 3-manifolds 2369
Antoine Henrot and Henrik Shahgholian, The one phase free boundary problem for the p-Laplacian with non-constant Bernoulli boundary condition 2399
Lorelei Koss, Ergodic and Bernoulli properties of analytic maps of complex projective space 2417
In Sung Hwang and Woo Young Lee, Hyponormality of trigonometric Toeplitz operators 2461
Joseph P. Previte and Eugene Z. Xia, Topological dynamics on moduli spaces II 2475
Karel Stroethoff and Dechao Zheng, Algebraic and spectral properties of dual Toeplitz operators 2495
Jason Levy, Regularized orbital integrals for representations of $\mathbf{SL}(2)$ 2521
Daniel M. Oberlin, Some convolution inequalities and their applications 2541

Vol. 354, No. 7 Whole No. 806 July 2002

Krishnaswami Alladi and Alexander Berkovich, New weighted Rogers-Ramanujan partition theorems and their implications 2557
Alberto Corso, Claudia Polini, and Bernd Ulrich, Core and residual intersections of ideals 2579
Carlos D'Andrea, Macaulay style formulas for sparse resultants 2595
Christopher D. Hacon and Rita Pardini, Surfaces with $p_g = q = 3$ ... 2631
Ngaiming Mok, On Fano manifolds with nef tangent bundles admitting 1-dimensional varieties of minimal rational tangents 2639

Nantel Bergeron and Frank Sottile, A Pieri-type formula for isotropic flag manifolds 2659
Alexander Zimmermann, Self-tilting complexes yield unstable modules 2707
Steffen König and Volodymyr Mazorchuk, Enright's completions and injectively copresented modules 2725
M. C. López-Díaz and Ivan P. Shestakov, Representations of exceptional simple alternative superalgebras of characteristic 3 2745
Gabriel Navarro, Vertices for characters of p-solvable groups 2759
Henry H. Kim, Applications of Langlands' functorial lift of odd orthogonal groups 2775
Kang-Tae Kim and Steven G. Krantz, Characterization of the Hilbert ball by its automorphism group 2797
G. Citti and A. Montanari, Regularity properties of solutions of a class of elliptic-parabolic nonlinear Levi type equations 2819
Anthony Manning, A Markov partition that reflects the geometry of a hyperbolic toral automorphism 2849
Jaroslaw Kwapisz, A priori degeneracy of one-dimensional rotation sets for periodic point free torus maps 2865
W. Sarlet, G. Thompson, and G. E. Prince, The inverse problem of the calculus of variations: The use of geometrical calculus in Douglas's analysis 2897
Roman Pol and Mirosława Reńska, On the dimensional structure of hereditarily indecomposable continua 2921
Richard F. Bass and David A. Levin, Transition probabilities for symmetric jump processes 2933
Danny Calegari and Nathan M. Dunfield, Commensurability of 1-cusped hyperbolic 3-manifolds 2955
Christopher Allday, Volker Hauschild, and Volker Puppe, A non-fixed point theorem for Hamiltonian Lie group actions 2971

Vol. 354, No. 8 **Whole No. 807** **August 2002**

Charles P. Boyer, Krzysztof Galicki, and Michael Nakamaye, Sasakian-Einstein structures on $9\#(S^2 \times S^3)$ 2983
Bo-Yong Chen and Jin-Hao Zhang, The Bergman metric on a Stein manifold with a bounded plurisubharmonic function 2997
Thomas J. Tucker and with an appendix by Olivier Debarre, Irreducibility, Brill-Noether loci, and Vojta's inequality 3011
Igor Dolgachev and JongHae Keum, Birational automorphisms of quartic Hessian surfaces 3031
Bojan Mohar, Light structures in infinite planar graphs without the strong isoperimetric property 3059
Jonathan A. Scott, Algebraic structure in the loop space homology Bockstein spectral sequence 3075

Manfred Stelzer, On certain co–H spaces related to Moore spaces 3085
L. Caffarelli and J. Salazar, Solutions of fully nonlinear elliptic equations with patches of zero gradient: Existence, regularity and convexity of level curves 3095
Junping Shi, Semilinear Neumann boundary value problems on a rectangle 3117
De-xing Kong, Formation and propagation of singularities for 2×2 quasilinear hyperbolic systems 3155
Ioan I. Vrabie, Compactness of the solution operator for a linear evolution equation with distributed measures 3181
Shujie Li and Zhi-Qiang Wang, Ljusternik-Schnirelman theory in partially ordered Hilbert spaces 3207
Olof Staffans and George Weiss, Transfer functions of regular linear systems Part II: The system operator and the Lax–Phillips semigroup 3229
Antonios D. Melas, On the centered Hardy-Littlewood maximal operator 3263
Caixing Gu, On a class of jointly hyponormal Toeplitz operators 3275
Simon Gindikin and Bernhard Krötz, Complex crowns of Riemannian symmetric spaces and non-compactly causal symmetric spaces 3299
G. N. Arzhantseva and D. V. Osin, Solvable groups with polynomial Dehn functions 3329
Peter Schauenburg, Hopf modules and the double of a quasi-Hopf algebra 3349
D. S. Passman, Invariant ideals and polynomial forms 3379

Vol. 354, No. 9 **Whole No. 808** **September 2002**

Henry K. Schenck and Alexander I. Suciu, Lower central series and free resolutions of hyperplane arrangements 3409
M. E. Harris and M. Linckelmann, On the Glauberman and Watanabe correspondences for blocks of finite p-solvable groups 3435
Daniel Allcock, Braid pictures for Artin groups 3455
Steve Clark and Fritz Gesztesy, Weyl–Titchmarsh M-function asymptotics, local uniqueness results, trace formulas, and Borg-type theorems for Dirac operators 3475
Xing Liang and Jifa Jiang, On the finite-dimensional dynamical systems with limited competition 3535
László Hatvani, On the asymptotic stability for nonautonomous functional differential equations by Lyapunov functionals 3555
E. N. Dancer and Shusen Yan, On the profile of the changing sign mountain pass solutions for an elliptic problem 3573
Shobha Oruganti, Junping Shi, and Ratnasingham Shivaji, Diffusive logistic equation with constant yield harvesting, I: Steady states 3601

Mohammad A. Rammaha and Theresa A. Strei, Global existence and nonexistence for nonlinear wave equations with damping and source terms 3621
Alexander Blokh and Michał Misiurewicz, Attractors for graph critical rational maps 3639
David Blecher and Krzysztof Jarosz, Isomorphisms of function modules, and generalized approximation in modulus 3663
Giuseppe Savaré, Compactness properties for families of quasistationary solutions of some evolution equations 3703
Irene Fonseca, Giovanni Leoni, Jan Malý, and Roberto Paroni, A note on Meyers' theorem in $W^{k,1}$ 3723
Robbert Fokkink and Lex Oversteegen, Homogeneous weak solenoids ... 3743
David Feldman and Alexander Wilce, Degenerate fibres in the Stone-Čech compactification of the universal bundle of a finite group 3757
Gaël Meigniez, Submersions, fibrations and bundles 3771
Ippei Ichigi, Hirofumi Nakai, and Douglas C. Ravenel, The chromatic Ext groups $\mathrm{Ext}^0_{\Gamma(m+1)}(BP_*, M_2^1)$ 3789
John Douglas Moore, Euler characters and submanifolds of constant positive curvature 3815

Vol. 354, No. 10 **Whole No. 809** **October 2002**

George E. Andrews, Christian Krattenthaler, Luigi Orsina, and Paolo Papi, *ad*-Nilpotent $\mathfrak{b}$-ideals in $sl(n)$ having a fixed class of nilpotence: Combinatorics and enumeration 3835
Jeffrey Lin Thunder, Inequalities for decomposable forms of degree $n+1$ in n variables 3855
Micheline Vigué-Poirrier, Hochschild homology criteria for trivial algebra structures 3869
Indranil Biswas, Differential operators on a polarized abelian variety 3883
Frauke M. Bleher, Universal deformation rings and Klein four defect groups 3893
A. Jaikin-Zapirain and Alexander Moretó, Character degrees and nilpotence class of finite p-groups: An approach via pro-p groups 3907
A. Stoimenow, On the crossing number of positive knots and braids and braid index criteria of Jones and Morton-Williams-Franks 3927
Vincent Blanlœil and Osamu Saeki, A theory of concordance for non-spherical 3-knots 3955
Pascal Lambrechts, Don Stanley, and Lucile Vandembroucq, Embeddings up to homotopy of two-cones in Euclidean space 3973
David Bachman, Critical Heegaard surfaces 4015
Paul A. Binding, Patrick J. Browne, and Bruce A. Watson, Spectral asymptotics for Sturm-Liouville equations with indefinite weight 4043
Masakazu Nasu, The dynamics of expansive invertible onesided cellular automata 4067

E. Odell and Th. Schlumprecht, Trees and branches in Banach spaces ... 4085
G. Bourdaud and Massimo Lanza de Cristoforis, Functional calculus in Hölder-Zygmund spaces ... 4109
Yong Zhang, Weak amenability of module extensions of Banach algebras ... 4131
Claire Anantharaman-Delaroche, Amenability and exactness for dynamical systems and their C^*-algebras ... 4153
Michael Kunzinger and Roland Steinbauer, Generalized pseudo-Riemannian geometry ... 4179
Xing-Bin Pan and Keng-Huat Kwek, Schrödinger operators with non-degenerately vanishing magnetic fields in bounded domains ... 4201
Radu Pantilie and John C. Wood, Harmonic morphisms with one-dimensional fibres on Einstein manifolds ... 4229
Christopher Willett, Contact reduction ... 4245

Vol. 354, No. 11 **Whole No. 810** **November 2002**

Markus P. Brodmann, Mordechai Katzman, and Rodney Y. Sharp, Associated primes of graded components of local cohomology modules ... 4261
S. Kuhlmann and M. Marshall, Positivity, sums of squares and the multi-dimensional moment problem ... 4285
Carolina Araujo, Kähler-Einstein metrics for some quasi-smooth log del Pezzo surfaces ... 4303
Art M. Duval and Victor Reiner, Shifted simplicial complexes are Laplacian integral ... 4313
Lidia Angeleri-Hügel and Jan Trlifaj, Tilting theory and the finitistic dimension conjectures ... 4345
Terrell L. Hodge and Brian J. Parshall, On the representation theory of Lie triple systems ... 4359
Jeb F. Willenbring, An application of the Littlewood restriction formula to the Kostant-Rallis theorem ... 4393
Christopher P. Bendel, Daniel K. Nakano, and Cornelius Pillen, Extensions for finite Chevalley groups II ... 4421
Valeriĭ A. Faĭziev, Themistocles M. Rassias, and Prasanna K. Sahoo, The space of (ψ,γ)-additive mappings on semigroups ... 4455
Andreas Defant, Mieczysław Mastyło, and Carsten Michels, Summing inclusion maps between symmetric sequence spaces ... 4473
Daniel Guan, Classification of compact complex homogeneous spaces with invariant volumes ... 4493
Manuel Gutiérrez, Francisco J. Palomo, and Alfonso Romero, A Berger-Green type inequality for compact Lorentzian manifolds ... 4505
Benjamin Muckenhoupt and David W. Webb, Two-weight norm inequalities for the Cesàro means of Hermite expansions ... 4525
Zhi Lü, Involutions fixing $\mathbb{RP}^{\text{odd}} \sqcup P(h,i)$, I ... 4539

Kathryn Hess and Paul-Eugène Parent, Emergence of the Witt group in the cellular lattice of rational spaces 4571
R. Bruce Richter and Carsten Thomassen, 3-connected planar spaces uniquely embed in the sphere 4585
Tullio Ceccherini-Silberstein and Wolfgang Woess, Growth and ergodicity of context-free languages 4597
Hassan Allouba, Brownian-time processes: The PDE connection II and the corresponding Feynman-Kac formula 4627
Zhen-Qing Chen, Gaugeability and conditional gaugeability 4639
Mihai N. Pascu, Scaling coupling of reflecting Brownian motions and the hot spots problem 4681

Vol. 354, No. 12 Whole No. 811 December 2002

Peter C. Gibson, Inverse spectral theory of finite Jacobi matrices 4703
Kusano Takaŝi and Manabu Naito, On the number of zeros of nonoscillatory solutions to half-linear ordinary differential equations involving a parameter 4751
J. Marshall Ash and Gang Wang, Sets of uniqueness for spherically convergent multiple trigonometric series 4769
Scott Sheffield, Ribbon tilings and multidimensional height functions 4789
Frank Sottile and Thorsten Theobald, Lines tangent to $2n-2$ spheres in $\mathbb{R}^n$ 4815
D.-Q. Zhang, Automorphisms of finite order on Gorenstein del Pezzo surfaces 4831
Claus Mazanti Sorensen, Fourier expansion of Eisenstein series on the Hilbert modular group and Hilbert class fields 4847
Jonathan M. Bennett, Hilbert transforms and maximal functions along variable flat curves 4871
Bassam Shayya, Nonisotropic strongly singular integral operators 4893
Donald R. King, Spherical nilpotent orbits and the Kostant-Sekiguchi correspondence 4909
K. S. Ryu and M. K. Im, A measure-valued analogue of Wiener measure and the measure-valued Feynman-Kac formula 4921
Jim Wiseman, Detection of renewal system factors via the Conley index ... 4953
Amir Dembo, Yuval Peres, Jay Rosen, and Ofer Zeitouni, Thick points for intersections of planar sample paths 4969
Robert S. Simon, Stanisław Spież, and Henryk Toruńczyk, Equilibrium existence and topology in some repeated games with incomplete information 5005
Carlos Benítez, Manuel Fernández, and María L. Soriano, Location of the Fermat-Torricelli medians of three points 5027
Sol Schwartzman, Uniform and Lipschitz homotopy classes of maps 5039
Osamu Saeki and Masamichi Takase, Spin structures and codimension two embeddings of 3-manifolds up to regular homotopy 5049

Robin Forman, Discrete Morse theory and the cohomology ring 5063
Chao-Nien Chen, L. F. Cheung, Y. S. Choi, and C. K. Law, On the blow-up of heat flow for conformal 3-harmonic maps 5087
Patrick McDonald and Robert Meyers, Diffusions on graphs, Poisson problems and spectral geometry 5111